

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

APHRASTOCHTHONIUS PACHYSETUS, A NEW
CAVERNICOLOUS SPECIES FROM NEW MEXICO
(PSEUDOSCORPIONIDA, CHTHONIIDAE)

BY WILLIAM B. MUCHMORE

*Department of Biology, University of Rochester,
Rochester, New York 14627*

Among several collections of pseudoscorpions taken by W. C. Welbourn from caves in the Carlsbad Caverns area of Eddy County, New Mexico, one included a single specimen of a remarkable species of *Aphrastochthonius* Chamberlin. As this is the first representative of the genus to be discovered in the southwestern United States, it deserves description at this time.

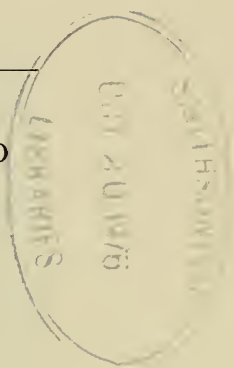
Aphrastochthonius pachysetus Muchmore, new species

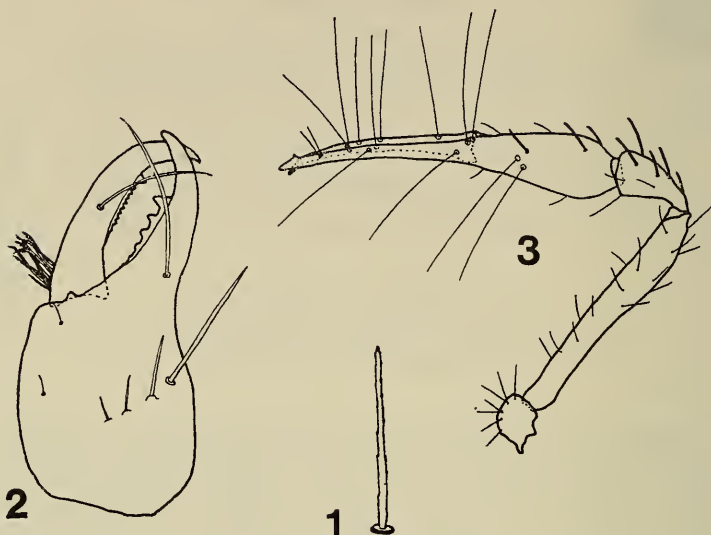
Figures 1-3

Material: Holotype female (WM 4041.01001), found in Doc Brito Cave, 4.5 mi NE Whites City, Eddy County, New Mexico, on 25-V-1975, by W. C. Welbourn. The specimen is deposited in the Florida State Collection of Arthropods, Gainesville.

Diagnosis: A medium sized species of the genus with palpal femur 0.67 mm long; with 4 setae at posterior margin of carapace; with flat parallel-rayed coxal spines; and with setae of carapace, anterior tergites and some segments of palps and legs heavy, roughened and blunt-tipped.

Description of female: With the characters of the genus (see Muchmore, 1972, p. 433). Carapace longer than broad; anterior margin with about 6 small, spaced denticles near middle; no eyes present. Chaetotaxy of carapace $m4m-4-4-2-4 = 20$; except for the simple, anterolateral microsetae (*m*), all setae heavy, with roughened shafts and blunt at tips (Fig. 1). Coxal area typical; chaetotaxy $1+m-2-1-(2m):3m-3-1-CS:3-2-CS:2-4(5):2-4$; maxilla with two microsetae ($2m$) on dorso-lateral surface; each coxa I with 3 microsetae ($3m$) on prominent apical projection; about 6 flat, parallel-rayed coxal spines on coxa I and about





FIGS. 1-3. *Aphrastochthonius pachysetus*, new species: 1. Seta from carapace. 2. Lateral view of left chelicera (serrulae omitted). 3. Dorsal view of right palp.

8 similar spines on coxa II; intercoxal tubercle with 1 small seta. Abdomen typical. Tergal chaetotaxy 4:4:4:6:6:6:6:6:4:T2T:0; setae nearly as heavy as those on carapace, slightly roughened, and anterior ones with blunt tips. Sternal chaetotaxy 6:(4)6(4):(3)8(3):12:11:10:9:9:2TIT2:0:2; setae relatively heavy, but all acuminate.

Chelicera 0.75 as long as carapace; hand with 7 setae, *sb* large and spinelike (Fig. 2); movable finger with 9 teeth decreasing in size from tip to base; fixed finger with 1 very large and 10 progressively smaller teeth; spinneret a very slight elevation; flagellum of about 10 pinnate setae.

Palps typical (Fig. 3). Trochanter 1.15, femur 7.4, tibia 2.1, and chela 5.35 times as long as broad; hand 2.6 times as long as deep; movable finger 1.19 times as long as hand. Femur about 1.5 and chela about 2.0 times as long as carapace. Some setae at distal ends of femur and tibia heavy, scaly, and with blunt tips. Placement of trichobothria typical. Movable finger with 9 spaced, acute teeth; fixed finger with 16 similar teeth and 1 accessory denticle on external surface near distal end. Sensory pit on movable finger far proximal of last tooth.

Legs typical. Leg IV with entire femur 2.65 and tibia 5.5 times

as long as deep. A few setae on various segments heavy, scaly and with blunt tips.

Male: Unknown.

Measurements (mm): Body length 1.50. Carapace length 0.43. Chelicera 0.325 by 0.155. Palpal trochanter 0.16 by 0.14; femur 0.665 by 0.09; tibia 0.23 by 0.11; chela 0.88 by 0.165; hand 0.415 by 0.16; movable finger 0.495 long. Leg IV: entire femur 0.48 by 0.18; tibia 0.33 by 0.06; metatarsus 0.155 by 0.05; telotarsus 0.385 by 0.04.

Etymology: The species is named *pachysetus* in recognition of the heavy, blunt, setae on the carapace, tergites, etc.

Remarks: This is the first representative of *Aphrastochthonius* to be found in the southwestern United States. Heretofore, the genus has been known from two cavernicolous species in Alabama (Chamberlin, 1962; Muchmore, 1968), three cavernicolous and one epigeal species from Mexico (from southern Tamaulipas southward) and one cavernicolous species from Guatemala (Muchmore, 1972, 1973). Until now it has been easy to distinguish the U.S. forms from the Mexican ones by noting the number of setae at the posterior edge of the carapace and the morphology of the coxal spines (see couplet 1 in the key of Muchmore, 1972, p. 441). *A. pachysetus* is, however, intermediate between the two groups in respect to these characters, having 4 posterior carapacial setae like the Alabama species and short, parallel-rayed coxal spines like the Mexican forms. Therefore, a new key is required (see below).

The heavy, roughened, blunt-tipped setae on the carapace and elsewhere in *A. pachysetus* are unique in the family Chthoniidae. The purpose of such a modification is not evident.

The occurrence of a single seta on the intercoxal tubercle is probably teratologic, the normal number almost certainly being 2.

KEY TO THE KNOWN SPECIES OF APHRASTOCHTHONIUS
(based mainly upon females)

1. Setae on carapace distinctly heavy, with roughened shafts and blunt tips (New Mexico) *A. pachysetus*, new species
 Setae on carapace "normal," that is, only moderately heavy, with smooth shafts and tapered, sharp tips 2
2. Posterior margin of carapace with 4 setae; coxal spines elongate and bipinnate (eastern U.S.) 3
 Posterior margin of carapace with 2 setae; coxal spines short and parallel-rayed (Mexico and Guatemala) 4
3. Palpal femur greater than 0.75 mm in length, l/w ratio greater than 7.0; cheliceral hand with 6 setae *A. tenax* Chamberlin.
 Palpal femur less than 0.70 mm in length, l/w ratio less than 6.0; cheliceral hand with 5 setae *A. pecki* Muchmore
4. Carapace with single microseta on each side, "preocular" in position; maxilla with 2 or 3 microsetae dorsolaterally 5

- Carapace with 3 microsetae on each side, one "preocular," others "postocular" in position; maxilla with 7 microsetae dorsolaterally (known only from tritonymph) *A. russelli* Muchmore
5. Palpal femur less than 0.5 mm in length l/w ratio less than 6.5 *A. parvus* Muchmore
- Palpal femur greater than 0.6 mm in length, l/w ratio greater than 7.5 6
6. Very large for genus, palpal femur greater than 0.8 mm in length; tergal chaetotaxy 4:4:4:6:6:6:—; and with 7 setae on cheliceral hand *A. major* Muchmore
- Smaller, palpal femur less than 0.7 mm in length; tergal chaetotaxy 4:4:4:4:6:6:—; and with 6 setae on cheliceral hand
 *A. verapazanus* Muchmore

ACKNOWLEDGMENT

This work was supported in part by a grant (GB 37570) from The National Science Foundation.

LITERATURE CITED

- CHAMBERLIN, J. C. 1962. New and little known false scorpions, principally from caves, belonging to the families Chthoniidae and Neobisiidae (Arachnida, Chelonethida). *Bull. Amer. Mus. Nat. Hist.* 123:299-352.
- MUCHMORE, W. B. 1968. A new species of the pseudoscorpion genus *Aphrastochthonius* (Arachnida, Chelonethida), from a cave in Alabama. *Nat. Speleol. Soc. Bull.* 30:17-18.
- . 1972. The unique cave-restricted genus *Aphrastochthonius* (Pseudoscorpionida, Chthoniidae). *Proc. Biol. Soc. Wash.* 85: 433-444.
- . 1973. New and little known pseudoscorpions, mainly from caves in Mexico (Arachnida, Pseudoscorpionida). *Assoc. Mex. Cave Stud. Bull.* 5:47-62.